PCB Air and Surface Wipe Sampling and Analysis Plan

Westport Middle School
400 Old County Road
Westport, Massachusetts

Westport Community Schools

Westport, MA

November 2011

FUSS & O'NEILL
Disciplines to Deliver

Fuss & O'Neill EnviroScience, LLC
50 Redfield Street, Suite 100
Boston, MA 02122

Project No. 20080788.A5E

FUSS & O'NEILL
EnviroScience, LLC

Disciplines to Deliver

Novemer _ 2011

Ms. Kimberly Tisa
PCB Coordinator
U.S. Environmental Protection Agency
One Congress Street, Suite 1100 (CPT)
Boston, MA 02114-2-23

RE: PCB Air and Surface Wipe Sampling and Analysis Plan
Westport Middle School, Westport, MA
Fuss & O'Neill Project No. 20080788.A7E

Dear Ms. Tisa:

We are submitting this PCB Air and Surface Wipe Sampling and Analysis Plan as the U.S. Environmental Protection Agency (EPA) has requested air and wipe samples be collected in the building as a result of PCB's being detected in various building materials at the school. The proposed testing and analysis is based upon completion of work in August through September 2001 to remove identified PCB Bulk Product Waste materials and limited interim measures for PCB Bulk Product Waste which could not be removed. The proposed sampling is to ensure air concentrations within the building and surface wipe sampling on non-porous surfaces are below EPA Public Health Levels for PCBs in Indoor School Air.

The plan calls for samples to be analyzed by EPA method 8270C (PCB homolog analysis) in the event the results are positive and a risk assessment is required.

Thank you for your attention to this matter and if you have any questions with regard to the plan please contact the undersigned, Robert May at (617) 282-4675 x 4701.

Sincerely,

Robert L. May Jr.
Vice President

Kevin W. Miller, Ph.D
President

RLM:asn

146 Hartford Road
Manchester, CT
06040

t (860) 646-2469
f (860) 533-5143

www.FandO.com

Connecticut
Massachusetts
New York
Rhode Island
South Carolina

1 Introduction

Fuss and O'Neill EnviroScience (EnviroScience) has been retained by Westport Community Schools located at 17 Main Road in Westport, MA 02790 to prepare a sampling and analysis plan for polychlorinated biphenyls (PCBs). The sampling and analysis plan has been prepared for the Westport Middle School is located at 400 Old County Road in Westport, MA. Sampling to be performed will include air and wipe samples within the interior of the School Building. Results of proposed sampling and analysis will be compared to the EPA Public Health Levels for PCBs in Indoor School Air. Wipe sample analysis shall be compared to EPA guidance for sampling of non-porous surfaces in school buildings.

2 Background

The Westport Middle School is located at 400 Old County Road in Westport, MA. The building was constructed in 1969 and consists of two floors plus a basement boiler room totaling 116, 000 Square feet. The building was initially tested as part of due diligence work for hazardous building materials as part of a Massachusetts School Building Authority (MSBA) Green Repairs project for window and door replacement. A report summarizing the testing performed is included in *Appendix A*. The initial testing identified materials containing regulated concentrations of PCBs in bulk matrices as well as asbestos. These included the following:

Sampling and Analysis Results Table for PCB Bulk Samples

SAMPLED LOCATION	MATERIAL TYPE	SAMPLE NO.	PCB CONTENT (mg/kg or ppm)
Room 264 (C1, C2), Cafeteria (B7, C3, C7)	Interior Window glazing Compound	511JH-C1A*	76-80 (Aroclor 1254)
Doors to exterior near Room 122 and Doors to exterior near Room 166	Interior Door caulking	0511JH-C2A*	1,200 - 1500 (Aroclor 1254)
Doors to exterior near Room 122,, Doors to exterior Main Entrance, Doors to exterior near Room 166	Exterior Door caulking	0511JH-C3A	110 -240,000 (Aroclor 1254)
Exterior Side C1, C4 Window, Exterior Side A1, A4 Window, Exterior Side B4, B7 Window	Exterior Window Caulking	0511JH-C4A*	190,000 -270,000 (Aroclor 1254)

* Materials also contain asbestos

Additional testing over the course of a 1 month time frame revealed interior air concentrations and dust containing PCBs above EPA regulatory guidance criteria. Additional building materials were tested and identified the following additional material containing PCBs at regulated concentrations:

Sampling and Analysis Results Table for PCB Bulk Materials

SAMPLED LOCATION	MATERIAL TYPE	SAMPLE NO.	PCB CONTENT (mg/kg or ppm)
Lower Level Room in Suite 106	Mastic/Felt on Concrete above Tectum ceiling deck	0627RM-30*	64 (Aroclor 1254)
Lower Level Room in Suite 106	Mastic/Felt on Concrete above Tectum ceiling deck	0627RM-31*	73 (Aroclor 1254)
Upper Level Cafeteria (A side Windows)	Caulking at concrete column between brick	0629RM-06	2,900 (Aroclor 1248) 5,500 (Aroclor 1254)
Lower Level Room 154	Compressible filler at Concrete column between column and gypsum (foam)	0629RM-07	56 (Aroclor 1254)

* Materials also contain asbestos

A pilot project was undertaken to remove select PCB Bulk Product Waste materials from three locations including Rooms 164, 212, and 264. Based on the results of post removal testing the Westport Community Schools made a decision to pursue removal of identified PCB Bulk Product Waste building materials and conduct decontamination of the school building replicating the work performed in the pilot project. Additional work was conducted and include interim measures to cover PCB Bulk Product Waste in the form of interior window glazing compound. Initial sampling for asbestos was also conducted and items noted with an asterisk also contain asbestos >1% Chrysotile. Requirements for abatement and removal of PCB Bulk Product materials with asbestos also required compliance with EPA requirements as well as Commonwealth of Massachusetts regulation for asbestos including containment and final air clearances. The subject site is a school facility also subject to the Asbestos Hazard Emergency Response Act (AHERA). A copy of the PCB remediation plan prepared for the project is included in *Appendix B.*

Upon completion of PCB Bulk Product Waste removal and interim measures conducted from August through September 2011, air samples were collected as post removal samples. The Westport Community Schools made a decision to collect samples in all rooms used as classrooms and large public spaces. In total 75 distinct sampling locations were sampled upon completion of removal work. The goal and result of the project conducted was to reduce pre-abatement air concentrations identified within the school building to 300 ng/m^3. School opening was provided on September 8, 2011 upon receipt of air sample results meeting the criteria. On September 8, 2011, 75-80% of the school building including 100% of the ground floor (lower level) met the EPA guidance concentration and the school was occupied. Those locations where results did not meet the EPA guidance criteria were isolated and not occupied. These included generally Cafeteria, Kitchen, Main Offices, Rooms 24,250, 251, 254, 255, 256, 257, 263, 264, 268 and 283. Subsequent to school opening additional cleaning and ventilation work was conducted within these areas and with the exception of two Guidance offices and Rooms 24, 255, 256 and 257 the remaining areas met the EPA guidance concentration for air and were occupied as of October 25, 2011.

In October 2009, EPA published Public Health Levels for PCBs in Indoor School Air and guidance on the proposed analytical methods and standards with regard to indoor air sampling

in schools. EPA is concerned that during the school year there could be exposure of potentially harmful concentrations of PCBs to school children and teachers. To minimize the hazard to the children and teachers, EPA published a table of Maximum Concentrations of PCBs in school indoor air. The Table referenced is a guidance to ensure that the EPA reference dose (RFD) of 20 ng/kg per day is not exceeded during a normal school day. It should be noted that the EPA table presumes no significant PCB contamination in building materials and average exposures to other potential sources of PCBs. The EPA advised that the maximum indoor air concentration for PCBs in a Middle School with children between ages of 6<12 be set at 300 ng/m^3 (*Appendix C*). For faculty and staff working in the building presumed to be ages 19 plus years (adults) set at 450 ng/m^3. Therefore, any concentration that exceeds these advisory concentrations will require action by the school to lower the concentration of PCBs and/or remove affected persons from exposure.

It should be noted the above advisory concentrations are considered "screening" values. Depending on the concentrations of PCBs detected the EPA may require a risk assessment. A risk assessment may require additional sampling, analysis and assessment. A PCB risk assessment is beyond the scope of this effort.

The EPA has also requested that in addition to air sampling that wipe samples on horizontal non-porous surfaces potentially accessible to students and faculty be conducted. Presently the standards for wipe sampling are included in 40 CFR Part 761.61(a)(4) (ii) for non-porous surfaces. This standard is for post remediation verification of clean-up. The present wipe clean-up concentration for non-porous surfaces is less than 10 µg/100 cm^2 (0.1µg/cm^2). We understand and have complied with EPA requests to utilize a standard of 1 µg/100 cm^2 (0.01µg/cm^2).

The EPA has not set regulatory limits for the concentration of PCBs in air; however, it has released the advisory concentrations stated above. This sampling plan uses the EPA advisory concentration as the basis for further action if necessary.

3 Methodology

3.1 Sampling Procedure

3.1.1 Air Sampling

Air samples will be collected in accordance with EPA Method TO-10A (*Appendix D*). Sufficient sample volume will be collected to ensure a detection limit that allows quantification of the data relative to the EPA advisory concentration of 300 ng/m^3 for children ages 6 to <12 and 450 ng/m^3 for faculty and staff at 19 plus years (adults) in schools. PCB Homolpg (TO-10A method EPA 680 modified) analysis will be performed on these samples after method 3540C extraction (soxhlet).

Intent shall be to conduct over the course of the school calendar year 100% re-sampling of all the original sampled locations following project work. The air sampling involved collection of air samples from a total of 75 distinct locations wit in the building. We shall add some areas in stairwells and hallways to obtain data from a minimum of 80 data points. The sampling shall be

conducted at periods of one quarter of the school year or 20 locations at one time until all 80 locations are sampled by the end of calendar school year. We shall initially focus on rooms where sampling did not meet criteria on first round of post remediation testing but include large assembly areas (media center, gym, cafeteria and rooms used for food preparation will be tested for PCBs, and then classrooms will be tested randomly. We shall involve public input from concerned parents, teachers and school committee to determine locations. If advisory concentrations are exceeded in these rooms, then additional sampling may be required.

Before sampling, the ventilation system will be operational and running at normal conditions to simulate exposure during occupancy and fluorescent lights will be turned off. Upon entering the room, the sampler will be careful not to disturb dust to minimize settled dust particles from being collected during air sampling. Air samples will be collected at the center of the room using a pump connected with tubing to a polyurethane foam (PUF) cartridge. The PUF will be placed at around 4 feet off the floor to collect air in the breathing zone of the most sensitive occupants (elementary -aged children). The PUF will be positioned so that the inlet is facing downward. The pump will have a flow rate of 2.5 L/min and will be run for a minimum of 4 hours up to a full school day. In addition one duplicate sample will be collected. We anticipate 20 sample locations, 1 reference (blank) sample and 1 duplicate sample for a total of 22 air samples. After sampling is complete, the samples will be collected, properly labeled and chain of custody filled out, and sent to Con-test Analytical Laboratory in East Long Meadow, MA for analysis by EPA Method TO-10A.

3.1.2 Wipe Sampling

Wipe samples will be collected in accordance with 40 CFR §761Sub-Part P (*Appendix E*). Sufficient sample size will be collected to ensure a detection limit that allows quantification of the data relative to the EPA action concentration of 1 µg/100 cm^2 (0.01 µg/cm^2). PCB Aroclor modified (EPA method 8270C) analysis will be performed on these samples.

Sampling shall be conducted in locations of air samples during each quarterly sampling event. If advisory concentrations are exceeded in these rooms, then additional sampling may be required by EPA. Upon entering the room, the sampler will be careful not to disturb dust to minimize disruption of the settled dust particles during wipe sampling. In classrooms, wipe samples will be collected along the window sill, the floor below 2 desks (one nearest the window and one along opposite wall), and on one horizontal surface (table, desk, etc.) along the wall opposite the windows. In food preparation areas, wipe samples will be collected along the window sill, from food contact surfaces (stove tops, serving tables, etc…) on a counter on the wall opposite the windows, and on the floor in the middle of the room. The wipe samples will cover 100 cm^2. For each sampling event, a reference (blank)sample per 20 wipes will be included. In addition one duplicate sample will be collected per 20 wipes samples. We anticipate at total of 80 sample locations, 4 reference samples and 4 duplicate samples for a total of 88 wipe samples. After sampling, the samples will be sealed in 4 oz. glass jars properly labeled and chain of custody filled out, and be sent to Con-test Analytical Laboratory in East Long Meadow, MA for extraction using EPA Method and analysis by PCB Aroclor analysis (EPA Method 8070C).

4 Action Levels

The goal of this sampling protocol is to ensure that the PCBs present in the materials do not present a significant health risk to the students and faculty in the school by comparing detected PCB concentrations to EPA advisory limits. Sampling results will be reviewed by senior EnviroScience staff and communicated to the school. Any concentration of PCBs above the EPA advisory concentration of 300 ng/m^3 or 450 ng/m3 for air or 1 µg/100 cm^2 (0.01 µg/cm^2) for wipe samples may require temporary control measures, cleaning or other efforts to decrease exposure to PCBs.